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RURAL ECONOMY, INTERNAL IMPROVEMENTS, PRICE CURRENT.

" O fortunatos nimium sua si bona norint
" Agricolas." . . . . . VIRG.

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AN ESSAY ON MANURES,

BY ARTHUR YOUNG, ESQ.

(CONTINUED.)

CHAPTER IV.

Clay, Loam, Sand.

These substances have all been used as manures upon the largest scale. The application has however too often been made without a previous analysis of the soil on which they have been spread. Their effect depends on the deficiency of the soil. Clay has been found every where beneficial on sand; but sand not equally so on clay, because so many clays contain far more sand in their composition than farmers are apt to suspect. Nothing is more common than to hear of clays, which, when examined, are found sandy loams; but they acquire their name of clays, because they are heavy for want of effective draining. Sea sand partakes of another class; it contains the muriatic acid; and if it be a shelly sand, it ranks with shell marle.

CHAPTER V.

Burnt Clay, Marle, and Earth.

Under this title is to be excluded the surface spit of old grass or waste lands, as that will be treated of in a succeeding chapter.

In various parts of the kingdom, as well as in Ireland, it has been a practice to burn clay, and clay marles, in large heaps, and to spread the ashes as manures. Switzer, about seventy years ago, was, I believe, the first writer who described the operation, and gave a plate of it. The nature and properties of burnt earth will vary with the portion of it which was calcareous, as that is converted by calcination into lime. Burning clay breaks the cohesion entirely, and reduces it to a permanent state of friability, which does not permit it to combine with any other substance; the sulphuric acid, which most clays contain, is dissipated; the iron and the clay itself are oxygenated, and a faculty in some cases to generate nitre is given. In its burnt state, also, it has a power of combining with the salt of urine. Burnt clays, when strewed on the ground, says Dr. Darwin, may contribute to vegetation, by their parting with their oxygen, in a fluid not a gaseous form; which, united with carbon, or phosphorus, or nitrogen, might supply nutritious fluids to the roots of vegetables. Its texture is extremely beneficial in dividing and attenuating the harshness of stiff soils, and rendering them more absorbent. These circumstances are amply sufficient to account for the benefit which many persons have derived from the practice of burning clay and marles. Mr. Leslie, in Ireland, made great exertions in this way; Mr. White Parsons has burnt the earth out of ditches and drains successfully; and Mr Boys, in Kent, has been long in the habit of doing it, paying his men sixpence per load of ashes for digging and burning.

CHAPTER VI.

Paring and Burning.

These are mechanical operations; and though nothing is directly added to the soil by them, yet the effects are in many instances very extraordinary, and as such ought to be treated of here. There is no subject in husbandry about which so many misconceptions are afloat, or such misrepresentations hazarded, as on this.

§. 1.—*The Nature of the Ashes resulting from this Operation.*

We shall examine the result of burning
1st. Vegetables.
2d. Earths, including, 1. Clay, 2. Loam, 3. Sand, 4. Chalk, 5. Peat;

Under one of which heads every soil may be arranged.

These two articles will include all that generally comes within the sphere of paring and burning; for the animal substances in this case are too inconsiderable to demand attention, although the destruction of *living* animals, as worms and insects, is a main benefit of the work.

Paring and burning, says Mr. Kirwan, reduces the roots of vegetables to coal and ashes, and thus prepares both a stimulant and nutriment for plants.

Lord Dundonald observes, that "it is only from the ashes of fresh and growing vegetables that saline substances, or alkaline salts, are to be obtained; none can be got from peat or decayed vegetable matter. The saline matter produced in the process consists of vitriolated tartar; the alkali of the burnt vegetables combining with the vitriolic acid, which in different states of combination is contained in most soils. Vitriolated tartar, has very powerful effects in promoting vegetation." It promotes, as Mr. Senebier remarks, the decomposition of water. It will hereafter be seen, that hydrogen is a most active food of plants. Whatever, therefore, assists in this decomposition, must act a very important part in vegetation.

Mr. Fourcroy thinks, that the ashes of burnt vegetables, which have been supposed to consist of earth or clay, when the fixed alkali is washed from them, are principally calcareous phosphorus, like those of animal bones. Lord Dundonald is of the same opinion. This observation is a most important one, and ought to be pursued. In regard to the calcination of earths, that of clay and chalk has been already treated. The circumstances are numerous in which this operation may be highly beneficial.

Loam is composed of various combinations of sand, clay, and calcareous earths. The effect of fire exerted on sand, whether mixed in the form of loam, or by itself in a sandy loam, has not been sufficiently ascertained; and to draw conclusions from theory would be dangerous. If I were to reason upon the point, I should imagine that fire would add nothing to the nature of sand which could render it more fertile. The tendency of its operation would be to lessen its small degree of cohesion, from whatever cause arising, and might so far be prejudicial. Iron brought into combination with pure air, lessens the aggregation.* It is however a question demanding the combined efforts of the chymist and the farmer, not *reasoning*, but *experimenting*.

The effect of heat in this operation is remarkable. Wherever burning has been much practised, experience has demonstrated the necessity of removing all the ashes where the fires were made; and though careful farmers remove some of the uncalcined earth, still these spots manifest a deeper green in the crop than is observable in any other part of the field. The *general* warmth diffused may probably have a greater effect than is suspected.

§. 2.—*The Properties of the Ashes, resulting from Paring and Burning.*

Vegetable ashes imbibe carbonic acid from the atmosphere.* They act in decomposition, and yield three-fourths in carbonic acid, and one-fourth a little inflammable; and last many years, by re-absorbing in winter the principles they had lost in summer.†

I imagine that the advantage of paring and burning some soils depends on the heat emitted from the burning vegetable fibres uniting oxygen with the clay, which forms more than the half of the slices of turf as they are dug from the ground.‡

That the ashes produced by paring and burning operate as a very powerful manure, cannot be doubted; since in nine-tenths of the trials that have been made through the wide range of so many counties, the crops which followed have been found to be very great indeed, and generally superior to those procured by means of any other manure. It is not the want of this success that has made so many enemies to the practice, but rather the contrary; the crops have been so large, and so often repeated, *because great*, that the soil has been left in a state of exhaustion.

This is a subject that demands the attention of the experimental chymist more than most others in the theory of agriculture. The examinations which have been made on the ashes of vegetables, and of earths, will account for a certain degree of benefit resulting from their use; but perhaps it does not fully account for the enormous crops which are gained by the operation of paring and burning. I have gone through not an inconsiderable course of reading, with a view to discover the theory of this fact; but my research has not entirely satisfied me. The formation of charcoal, sulphate of tartar, and phosphate of lime, with the decomposition of water, and the oxygenation of clay, added to the mechanical change effected by the fire, may certainly account for a considerable part of the improvement.

§. 3.—*The Paring and the Burning.*

The common practice is to pare from two inches on peat soils to half an inch on others; an inch is the most general depth.

Mr. Wilkes, of Derbyshire, has ploughed nine inches deep, and burnt the whole furrow with the assistance of coal *sleck*; manuring double the quantity of land burnt, but working an immense improvement on the space thus deeply burnt. I have seen other cases in which four inches depth was burnt with great success. In the fens of Cambridgeshire the paring is done with a plough, and the depth from one inch to two. On sand the paring should be as shallow as possible.

The chief attention paid in burning is to guard against too great a calcination; as the general opinion of those who have most practised this husbandry is, that the turfs should be rather scorched or charred than reduced to ashes. If burnt during a brisk wind, sands frequently vitrify, and will not afterwards in many years, if ever, be restored to a state capable of contributing any thing to the support of vegetables; hence it is a practice with those who are aware of it, prior to burning, to shake out, in dry weather, from the grass-roots, the greatest part of their substance with harrows. The heaps should always be small, and the fire be applied on the sheltered sides of them;—this method, in a degree, should be

* Davy.

* Priestley. † Fabbroni. ‡ Darwin.

regarded in the burning of earths of almost every kind; as hereby alone a carbonized substance, called he black ash, will be obtained; instead of a red brick earth, of much less fertility in the outset, and afterwards less susceptible of its principles as imbibed from the atmosphere.

In practice, however, as I have found more than once on my own farm, other circumstances will govern this point; such as, the weather in drying the turf, the depth to which pared, and the age of the grass; for these points have all an influence on the size of the heaps.

§. 4.—*State in which the Ashes are applied.*

Here occurs a considerable variation in common practice. There are two methods; one, to spread and plough it immediately; the other, to spread immediately, but to leave them exposed to the atmosphere some months before turning in. Mr. Wedge, on the thin sand soil on a chalk bottom of New-market-heath, had in one field a treble experiment; part was pared and burnt in the spring, and the ashes spread and exposed till ploughing in the autumn for wheat; the part pared and burnt late, the ashes left in heaps, and spread just before ploughing for wheat; the third pared, and not burnt at all, by reason of bad weather. The first was by far the best—the second the next—and the third beyond all comparison inferior. This seems to be a decided proof that the ashes absorb some matter from the atmosphere, which adds to their fertilizing qualities.

§. 5.—*Application.*

The circumstances which may with propriety be touched on under this head, are,

1st. Spreading.

2d. Depth of tillage.

The fact of the ashes improving more after having been for some time exposed to the atmosphere was probably the motive which induced Mr Tuke, of York, to pursue on the wolds of Lincoln a practice that deserves attention. It is to pare along the centre of the lands a width sufficient for the heaps and burning; to move the sods, in order to plough the breadth; then to plough it; to make the heaps for burning on the land so ploughed; by which means all the land may be ploughed before the ashes are spread, and by this means kept on the surface: two material objects being attained; 1st, the exposition of the ashes; and 2d, they are not ploughed to the bottom of the furrow, but kept on the surface to combine with the land, and early sinking prevented.

Evenness of spreading is always a material object, whatever may be the manure.

The universal practice (except in one very singular instance, is to plough the first time very shallow. A multiplicity of observations have convinced the farmers in almost every part of the kingdom, that these ashes have a tendency to sink; and the aim has therefore been to keep them near the surface by shallow tillage, especially at first. The method of ploughing before they are spread, entirely obviates the necessity of such a practice.

§. 7.—*Season.*

As the work can only be done in dry weather, it is usually begun in March, in which month the N. E. winds are more drying than at any other time.—When the space to be burned is large, it is continued till September; and as the ashes are the better for exposition to the atmosphere, any crop may be put in that best suits the farmer's conveniency.

§. 8.—*Soil.*

As the *quantity* of the manure thus gained depends entirely on the depth of paring, I pass on to the consideration of sods on which the practice may be recommended.

I have tried it myself on but two soils, on mountain peat, and on middling loam: on both these I had entire success. But the information which the respectable Society I address look for, must be derived from more varied experience than it is possible for one person to pretend to, I shall therefore select a few cases which will embrace all the soils. These might be multiplied tenfold, but it would swell these papers to too great a length to offer more than a sketch.

Clay.

Mr. Bailey, of Northumberland, speaking from great experience, says, "that he has found this operation the most effectual remedy or preventive of the calamity of the red worm and grubs." The advantage of the practice is the certainty of full crops. "I do not," says he, "recollect an instance where the cultivator was ever disappointed; and it is this amazing fertility that has tempted many people to go on with repeated corn crops, until the soil was exhausted."

Loam.

On the inclosure of Stanwell in Middlesex, the allotments succeeded well under the perfect practice of paring and burning; and ill where the turf was ploughed without the application of fire.* In the former case the land was immediately fit for turnips, tares, barley, and clover. In the latter, the tough wiry bent heath, and dwarf furz, kept the land too light and spungy for any crops; and the farmer will be plagued for many years. The difference between the two methods is more than the value of the freehold in favor of burning. I have observed in various counties the same decided preference."†

In the inclosure of Enfield-Chase, (the soil, Loam) Dr. Wilkinson states, from experience, that paring and burning saves a very heavy expense; that the ashes possess most fertilizing qualities; that grasses are thus much sooner to be introduced; that it is a security against the ravages of the worm; and that so far from ruining its staple, the land has afterwards retained its fertility during five successive crops.‡

After nine years cultivation of land broken up without burning, it has been noticed, that on being laid down, young furz sprung up generally; burning is therefore absolutely necessary.§

Mr. Exter, near Barnstaple, broke a grass field in an inclosed farm, one half by paring and burning, the other half by fallow. The first crop was wheat; the burnt gave thirty-five bushels per acre, the ploughed seventeen; the former was clean, the latter had much couch. Winter tares; the burnt were fourteen inches long, when the ploughed were only six; when eaten off by sheep, the second growth was in length as twelve to four. The next crop being turnips, and dunged equally, the burnt side was free from the fly. Barley succeeded, which was considerably better on the burnt part. Clover was next, which was closer eaten on the burnt part; and when laid to grass, was worth 5s. per acre more than on the ploughed half.

Mr. Dalton, of Yorkshire, on a dry loam on limestone and gravel. "It is a mere chimera to suppose that the soil is diminished by paring and burning, I have done it in the same field twice in the course of fifteen years, and could not discover it in the smallest degree"‖ On a light loam in Cornwall, Mr. Ans observes, "I was not *singularly* misled by speculative writers (who, I fear, have much to answer for) to think that burning caused a lasting injury to the earth. I fallowed three fields. I expected them to continue free from moss beyond the common period of its return. I found myself much mistaken; besides the crops failing, like those of some of my neighbors who had not burned, the moss returned as usual. Hence I and all my fellow-sufferers from fallowing have totally abandoned this practice, and stick to the ancient one of burning."

"It has been the practice of a friend of mine, and his father before him, and of others before them, for near a century past, (the estate having been in the family for many generations) on their thin limestone land, constantly to pare and burn after ten years grass. The soil is so thin that the plough scalps the rock; yet no diminution of soil is in the least discovered."¶

Sand.

"Upon sand I have tried paring and burning, but unsuccessfully."† But Colonel Vavasour speaks of it favorably on this soil, and from experience. Quere, whether this difference of result did not hold to their courses of crops? The former speaks, in another case, of two crops of wheat, and one of oats. The latter, 1. turnips, 2. back-wheat, 3. seeds. If Mr. Wright looked on sand for corn, and not grass, no wonder he was unsuccessful.

Chalk.

Mr. Boys, near Sandwich, in 1783, pared and burnt twenty acres of loose dry chalk mould, four inches deep, on a hard chalk rock, value 1s. per acre, and sowed barley and sanfoin in March. His whole expence, barley crop included, £53. Produce sixty-six quarters of barley, at 26s.—£86, his *profit* £33, or the fee-simple of the land at twenty-two years purchase the then price. The sainfoin took well.‡ In 1795, he writes to the author of the periodical work just quoted, "Should any of your friends, who so much condemn paring and burning, come into Kent this summer, I can shew them several scores of acres of wheat, barley, oats, and sanfoin, now growing on land which has several times undergone the operation:—the crops of sufficient value to purchase the land at more than forty years purchase, at a fairly-estimated rent, before the improvement. This will be ocular demonstration to them."

Peat.

Twenty years past a field of coarse rushy land was broken up; part pared and burnt, the rest not.—Whilst in tillage, the part burnt yielded crops uniformly better than the others. It has been down to grass several years; the burnt part is quite free from rushes, and covered with a good sweet herbage; the other part full of rushes, and the herbage coarse.§

Mr. Simpson says, "I ploughed ten acres of moor, on a lime-stone bottom, in the part most free from ling, without burning, and I have had sufficient cause to repent it; for I have not had even one middling crop since; and although laid down with seeds, they have by no means so good an appearance as those sown the same year on similar soils after burning, although I have expended as much lime and manure on this as on any part of the farm."‖

Near Orton, on a peat moss, six or eight inches deep, on a stiff bluish clay; the only vegetable produce spongy moss, bent grass, dwarf rush, &c. wet and not drained: pared three inches deep, and burnt in the spring; then manured with thirty bushels of lime an acre; ploughed slightly for turnips, which were not hoed. They were worth £3 an acre; and being sown with oats, produced seventy bushels per acre.¶

Miss Graham was the first that pared and burnt moss in Monteith. Several acres that were burnt above forty years ago, continue to carry a close sward of green grass at this day, without a single pile of heath.**

"Of all the methods of breaking up peaty soils which I have practised or seen, the best mode is paring and burning. I have seen various methods on several thousand acres, but none ever equalled this."††

CHAPTER VII.

Of Yard and Stable Dung.

To attempt exhausting such a subject as this, would be to compose a volume. The time allowed by the Society can admit of no more than siezing the features which are most prominant.

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* And which will be the case 99 times in 100 universally.

† Middleton,s Middlesex. ‡ Ibid. § Ibid.

‖ Communications to the Board of Agriculture.

* Mr. Wright. † Ibid. ‡ Annals.

§ North-Riding Report. ‖ Ibid.

¶ Todd. Society's Transactions.

** Perth Report. †† Bailey.

Every writer with whose works I am acquainted, and at least ninety-nine farmers in one hundred, have written and practised on the common system and preconception, that dung is to be accumulated on hills or receptacles for a longer or a shorter time, till fermentation and putrefaction have brought it, after few or many months, and few or many operations of turning or mixing, to a certain state, in which it is ready and proper for applying to the land.

But there is another system of management, which of late has attracted a good deal of attention, and that is, to use it fresh as made. Now if this method should by experiment be proved right, it renders nearly useless all elaborate dissertations, by which we are instructed in the whole management of dunghills; since the result would prove that we ought to have no dunghills at all, or nearly none.

As this question must necessarily influence whatever can now be ventured on the subject, I shall take the liberty of making it the first object of enquiry.

In the first place, let us search for facts and experience. The late Mr. Ducket conceived, that the more dunghills are *stirred*, and turned over, and rotted, the more of their virtue was lost. Long dung he esteemed much more than the same quantity of short dung, which time had converted the former to.*

Mr. Patterson of Wimbleton, agrees with many garden farmers near him, that on a comparison of fresh dung with such as is well mixed and rotten, the result is very generally in favor of the long.†

Mr. Bocket, of Hertfordshire, a very accurate farmer, says, the fresher dung is used, the better even for grass.‡ He has found long dung, of only one or two months old, to be better, load for load, then black spit dung, for turnips.

The best farmers at Wintringham are of opinion, that laying yard dung on heaps is bad; it is much better to cart it to the land at once. Mr. Crust remarked, that those who make heaps, and consequently rot it much, never have such a return from their dung as others by a different management. Mr. Lloyd is much against hilling manure; always carrying it long from the yard: he has made repeated observations on the comparison, and is decided in the result. Mr. Clough leads dung directly from the yard; never hills it, which is utterly disapproved of.§

Near Meaux in France, the farmers carry out their dung quite in a long strawey state, which they contend earnestly is much better than to leave it to be more rotten.‖

Mr. Johnson, near Northampton, has been for many years in the practice of carrying on to his land long straw dung, merely wetted by the cattle; and has found that the fresher it is laid on the land the better the effect. He carries it out as fast as made; and if not done quick enough, observes a failure in the crop. He spreads such even on his grass in summer, and finds the effect great.

Mr. Robinson, near Salisbury, gives his own account. "I was long in the habit of drawing all my dung out of my yard, and laying it into a heap to be half rotted before I carted it to the ground; but by thus doing, when I pondered the subject over, I tho't it not unlikely that I lost both in the quantity and the quality of the dung, and I was sure that I multiplied labor, and increased expense. To satisfy my doubts, therefore, I hauled the dung immediately from the yard to the field, where I meant to sow pease; and with a skim before the coulter buried this long stuff pretty well. I drilled the pease, and never hacked a better crop, or had a cleaner and mellower season for wheat. This trial removed my doubts, and I have since followed the same plan with advantage; and have the satisfaction of seeing many others, formerly equally blind with myself, sufficiently quick-sighted now to reduce their labor, and increase their crops. I have been confirmed in the practice by observing the conduct of a very able, wealthy, and experienced farmer near Chippenham. He has pasture, or dry meadow, arable, and down. He folds his arable, and dresses with the sweepings of the town, and leads all his long dung from his yards to his pasture grounds; and the greener the dung, the better he likes it. By persevering in this method, his crops of hay are doubled; and where cattle were never before attempted to be fattened, he now feeds oxen of two hundred stone for the Bath market."*

Mr. Rogers, of Ardleigh in Essex, an extremely intelligent and successful farmer, has carried both long and short dung on for turnips, and for potatoes, and found the long best: and the experience has induced him to have much fewer muck hills than he formerly had. He carries so much directly to the land, that he has not one hill on his farm to ten that he had formerly.†

Mr Chapman, of Hitchin, has observed, that about Baldock the farmers carry out their dung in a remarkably long state, without rotting, and yet they get as good turnips as any where.

Mr. Roberts, of King's-Walden, would always, on every account, carry stable dung long and fresh to the land. But he thinks that farm yard manure should be turned up once, yet not kept too long.

Mr. Shedgwick, of Rickmersworth, carries all his dung out for turnips, when he has finished his spring sowing. He is clearly of opinion that long dung is best; and if it could be carried from the stable, and ploughed in immediately, it would be by far the best.‡

I have collected other modern authorities.

Mr. Denton, of Norfolk, manured one part of a field, a layer of seeds, (the soil quite a sand) with fresh long dung, and the other part with turned over short dung: the difference was considerable, and in favor of the long dung. Mr. Bradfield, of the same county, carries his yard dung long without any turning or mixing, and spreads it about six weeks before sowing turnips.

Mr. Priest, upon land unkind for turnips, laid long fresh dung in the furrows of narrow ridges, reversed them, and drilled: the crop the largest turnips and the best in the neighbourhood.

When Mr. Everit has fallen short with his dung hills, and has taken long and fresh dung to finish with, he has had as good turnips as after the short.

Mr. Brown has carted long stable muck in March, for turnips, and had as good turnips as from short hilled muck; but gives fifteen loads instead of twelve.

Mr. Francis has tried long muck fresh from the yard, and it does as well as any; but not quite so quick a growth of turnips for the first six weeks.

Mr. Cubit has often carried out long fresh dung for turnips, and the effect has been very good especially if the land has been at all strong or wet.

Mr. Dyble has on many acres carted long fresh stable muck for turnips, ploughing it at once, and gained fine crops if the season proved wet, but not in a dry time.

Mr. Repton thinks long dung the best for turnips; however, he seldom uses it; but when he has, the turnips have generally been the best.

Mr Johnson, of Norfolk, thinks that muck wastes by keeping to an unprofitable degree; and that the more it is turned over, he worse. He has tried long muck fresh from the yard for turnips, and got as good crops by it as by any other, and the corn also as good.

Mr. England, Mr Reeve, and Mr Dursgate, have tried both, and think short muck best for turnips.

Every one of the preceding list are excellent and truly practical farmers, to whom I applied for their opinion on this point, so far as it was founded on experience.

"With respect to laying on manure," says Mr. Wilkes, "I have experienced that dung carried from the stable yard, at not more that three days old, and laid directly on the land, both in summer and in winter, has an advantage of 20 per cent over that dung which is kept from nine to twelve months."*

"I use long muck from choice; which I think far better than turning, mixing, and rotting it."†

"I have the anthority of one of our most intelligent and experienced farmers for asserting, that half-rotted litter is of more advantage than it would be if kept at the farm until thoroughly rotted."‡

As the tendency of this system is to work almost an entire change in the rural economy of the larger part of the manure which is raised in most farms, I have been solicitous to multiply cases; and I think the Society will be of opinion, that this is a point which should be settled before any disquisitions on the management of dunghills should be offered. But it cannot be expected that the best attested facts should become the established rules of practice, until they can be explained and confirmed by a sound and rational theory. These facts must therefore be brought to the test of chymistry.

In the writings of Hassenfratz I find this remark: "The management of Picardy farmers is highly advantageous in the continual transport of their dung to their lands, rather than leaving it to be exhausted in the farm-yard, in order to be carried out at a fixed period. By applying the dung quite fresh to the land, its first fermentation is employed in heating the soil; the little alkali which it contains, instead of being dissolved in the farm-yard, and carried off by rain, remains in the land, and improves it, if alkali be useful to vegetation. The straw yet entire better divides the soil; its fermentation advances less rapidly, is less advanced when the seed is sown, and consequently the dung is in a better state for furnishing a great quantity of the chalky carbonic acid, which hitherto appears to be, with water, the principal aliment of plants." And in another work he has since declared his opinion, that carbon is the principal food; and water, I suppose, its vehicle. I need not remark to so enlightened a Society, that this gentleman is one of the greatest chymists at present in Europe, and that his doctrine meets the entire approbation of Mr. Kirwan.

A point of extreme importance is here implied, if not expressly asserted, that it is the same kind of fermentation which acts upon a small portion of moistened straw in the land, which effects the conversion of a large mass in a dunghill. Nor is it easy to conceive the destruction of the one, but on the same principles which destroy the other.

Dr. Darwin asks a most interesting question. "If the recrements of vegetable and animal bodies, buried a few inches beneath the soil, undergo the same decomposition as when laid on heaps in farm-yards? Although this is accomplished more slowly, yet it is attended with less loss of carbonic acid, of volatile alkali, of hydrogen, and of the fluid matter of heat; all which are emitted in great quantity during the rapid fermentations of large heaps of manures, and are wasted in the atmosphere, or on unprolific ground." "By using dung in a less decomposed state, though it will require some time before it will be perfectly decomposed, and reduced to carbonic earths; yet it will in the end totally decay, and give the same quantity of nutriment to the roots, but more gradually applied."§

That fermentation of vegetable bodies which is accelerated and enriched by the addition of animal matter, is an oxygenating process: the oxygen unites with the carbon and phosphorus, in the decomposition of these substances. "When vegetable substances are decomposed by fermentation, there is a quick union of oxygen and carbon; and the carbonic acid gas rises in vapour," and is lost from a dunghill; "but in mould turned over and exposed to the atmosphere, this carbonic acid is slowly produced, and is absorbed by vegetable roots."§

"Vegetable and animal matters cannot serve as

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* Annals, vol. x. † Ibid. vol. xvii.

‡ Columella says, that the very freshest ought to be spread on meadows. Lib. ii.

§ Lincoln Report. ‖ Young's Travels.

* Annals, vol. xxxviii. † Ibid. vol. xli.

‡ Herts Report.

* Communications to the Board of Agriculture.

† Rodwell, ib. ‡ Dr. Fenwick on Manures.

§ Darwin.

manures till they begin to ferment; nor are they of any utility when the fermentation is finished."†

"There is good reason to believe, from many facts, that putrefaction is no way necessary to the nutritive power of animal and vegetable matter, but in so far as it diminishes their cohesion, or destroys their texture, and thereby renders them fitter for absorption; and as there is a considerable waste in gasses and ammonical and nitrous salt by putrefaction, it is of importance not to allow the putrefaction to take place at all, where it is not required to break the texture."‡

Without multiplying quotations, here is an ample fund provided by chymists of great eminence for the mind of an attentive reader to work upon. They are fully sufficient to account for the observations of the practical farmers inserted above. And this application of chymical to agricultural facts should make the farmer deeply reflect, before he continues a system of management in which much expense is exerted in order to do mischief.

He who is within the sphere of the scent of a dunghill, smells that which his crop would have eaten, if he would have permitted it. Instead of manuring his land, he manures the atmosphere; and before his dunghill is finished turning, he has manured another parish, perhaps another county.

View all the farm-yards in the kingdom, and the management of the dung; in some it is better than in others; in some, water washes the manure away; in all, the atmosphere perpetually depredates.

I shall add no more on this elucidation, but proceed to the practical division of the subject *thus considered.*

§. 1.—*Of the Nature of Dung.*

All organized bodies are resolvable into hydrogen, nitrogen, oxygen, carbon, phosporus, and sulphur.

The mixture of animal and vegetable matter, which is called dung, *per se,* or in union with water, earth, and the atmosphere, by nature or formation, contains all these. No wonder, therefore, that dung should be found an universal fertilizer.

§. 2.—*Of the Properties of Dung.*

The experiments are numerous that give us reason to conclude, that the chief articles in the food of plants are hydrogen and carbon. The trials are satisfactory upon the first; but carbon is given in so many ways united to hydrogen, that it is not often easy to decide what is due to one substance, and what to the other. Some degree of uncertainty attends all applications by water; for if the plants decompose it, it may be the hydrogen they absorb, and the added substance may only assist in the decomposition.

The grand property of dung is therefore to yield immediate food to plants. It further opens the soil, if strong; it attracts moisture; and by the fermentation which it excites *in the soil,* promotes the decomposition of whatever vegetable particles may be already in the land. Its effects have powerful progressive influences; for the production of a great crop of leaf, root, and stalk, by its shade and fermentation, leaves the land in better order to produce succeeding crops. It would be useless to expatiate on properties so well known.

§. 3.—*Collecting.*

The circumstances to be attended in the receptacles of yard and stable dung are few, but important.

The first object which I have attended to for many years, has been to spread a layer of earth over the surface of the yard; peat is the best for this purpose, with a portion of marle or chalk; in the want of this, turf, rich mould, scourings of ditches, and some marle or chalk; but not so much of either as to form so solid a bed as to prevent the penetration of the fluids, which should enter sufficiently to give a black color to the whole. There is no necessity for removing this every time the dung is removed, as there are no advantages from fermentation in the mass till carried on to the land, no attention should be paid to prevent treading and pressing the mass. But as it is beneficial to have the whole as equal as possible, it is very useful that the stable-dung should be spread over the surface, and not left to accumulate at the door. The same observation is applicable to the riddance of the fat bullock-stalls and the hog-sties. Heavy rains will at times, in spite of every precaution, cause some water to run from the yard; this should be received into a reservoir covered, and by a pump raised on to heaps of earth prepared to receive it. This is all the attention necessary upon sound principles. In summer, weeds of every kind that do not propagate from the root, should be early collected and spread over the surface, as well as leaves in autumn: and the foddering with straw, (if any) and the soiling on green food, should both be upon it, for all loose cattle.

§. 4.—*Preparation.*

None. No turning, or mixing, or stirring. But if circumstances of the richness, or quantity, or weather, have occasioned too much fermentation, or this is suspected, scatter every now and then a quantity of the same earth over the surface with which the yard was bedded, but not in layers. This may be so proportioned as to keep the mass from too much fermentation.

§. 5.—*The State in which applied.*

As it arises from the heap in such a strawey length as the time it has been accumulating will have permitted, a fermentation, more or less advanced, will have taken place from the mixture of vegetable matter with urine and dung, in proportion to the warmth of the season. Upon the principles just detailed, it is to be carried to the land as soon as circumstances of crops and convenience will permit. In a business of any extent this cannot be done exactly when the absorption of animal matter is enough to secure a due fermentation in the soil, but must be directed by other circumstances. The farmer is however not to lose sight of those principles which govern the operation.

§. 6.—*Application.*

This point demands attention. All dung should be applied to hoeing crops, to layers, or to grass land, and never to white corn; but this is more essential with fresh long dung that with that which is short. There will be many more seeds of weeds in it, several sorts of which are destroyed by a strong fermentation. To spread therefore long fresh dung on arable land, for crops not to be hoed, would be to sow the seeds of weeds without ensuring their destruction. The proper crops for which to apply yard and stable dung, are turnips, cabbages, potatoes, beans, and tares for soiling; and the season for putting in these crops are the Spring, Midsummer, and September. But the farmer is not confined to carry on his dung at the time of sowing or planting; it is, on the contrary, much better (and especially with long dung) to have it previously deposited in the land. For turnips, and for cabbages planted in June, the manure may be given any time in April, May, or June; for potatoes, it may be laid in March or April; for tares, in August or September; for beans, in November; and ploughed in ready for immediate planting or drilling early in the spring, without further tillage. If the dung is turned in for any crop so early that more tillage is to be given before sowing or planting, it should be ploughed in deep enough for the successive operations to be shallow and above it. Never let it be forgotten, that all animal and vegetable manures have a constant tendency to *rise,* as fossil ones have to *sink.* By decomposition they come in a fluid state, and are either absorbed by the soil, taken up by the roots of the crop, or dissipated in the atmosphere.

Upon this system, therefore, the dung which is made in the depth of winter may be spread in March or April, for potatoes; the next made, and what is not wanted for potatoes, may be taken out in succession through April, May, and June, as convenience suits, for turnips and cabbages. That raised in July and August, will be ready for tares; and what is produced in September, October, and part of November, is ready for beans. The best time for manuring grass is immediately after hay is cleared from the field. By this or any similar application of the dung, the system of using long dung is rendered consistent with the cultivation of the farm, and the convenience of the farmer.

It is proper to remark, that the use of the skim coulter is essential to ploughing in long dung. By means of this admirable addition to any common plough, every atom may be buried. To leave any of it sticking out of the furrows, is to counteract the grand object of the husbandman, and materially to prevent that success which may be expected from the practice.

§. 7.—*Quantity.*

The right quantity of dung must be found from experiment. But at the beginning of any man's practice it will be proper to spread about the usual quantity applied in the old method. It has been found to answer in this proportion; and it is a circumstance extremely valuable, as it manures a much greater space of land than usual with the same stock of cattle.

§. 8.—*Soil.*

The idea of practical farmers is, that long dung is more applicable to strong than to light land; but Mr. Denton's experiment was on sand. Nor is there any reason, on an appeal to chymical principles, for fixing on any soil in preference to others for the application of this system of dunging. If, however, as it is generally allowed, it divides and loosens their constituent parts by its fermentation, it must necessarily have a more desirable effect on soils too compact, than on others already too light.

(To be continued.)

† Senebier.

‡ Dr. Pearson's Notes on Cullen.

TO THE EDITOR OF THE AMERICAN FARMER.

Thrashing or getting out grain.

Description of a cheap and efficacious implement made and used for this purpose by Farmers on the Eastern Shore of Maryland

White House, Queen Anns County, E. S.
Maryland, 17th Jan. 1822.

Mr. Skinner,

Enclosed you will receive a plan and communication addressed to me by Mr. James Ringgold of Kent, one among the best and most intelligent farmers of that county, on the subject of his improved rollers for getting out wheat. Should you deem it, as I presume you will, worthy of an insertion in your most useful paper, I will take the liberty to suggest the importance of an early publication of it, as this is the season at which the requisite timber ought to be got by those who may wish to furnish themselves with the implement. If what Mr. Ringgold has said respecting them needed any corroboration, I could add the testimony of my own experience, having made two, with which I have got out the greater part of my last crop, and found their operation to equal my most sanguine expectations. The most simple and economical thrashing machines yet introduced among us, are too expensive for the great majority of our farmers—these rollers are completely within the means of almost every one; and I think, all things taken into consideration, are likely to become more generally useful than the machines.

Yours truly,
EDW. TILGHMAN, 3d.

Eastern Neck, Feb. 10th, 1821.

Dear Sir,

I have received your letter of the 2nd inst. requesting me to furnish you with a particular description

of my wheat rollers—their dimensions, manner of making, and apparatus for boring them, with which I cheerfully comply; and as I suppose it would be impracticable to give you a satisfactory description on paper without drawings, I will attempt these, although I fear they will be executed in so clumsy a manner, as scarcely to make my explanations more intelligible.

Fig. 1.

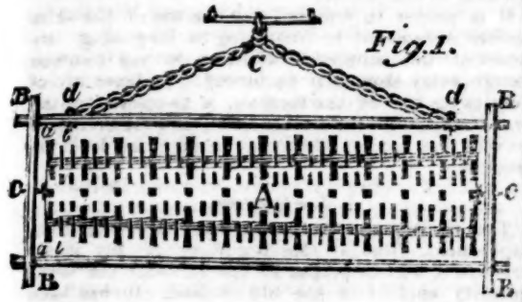

Fig. 2.

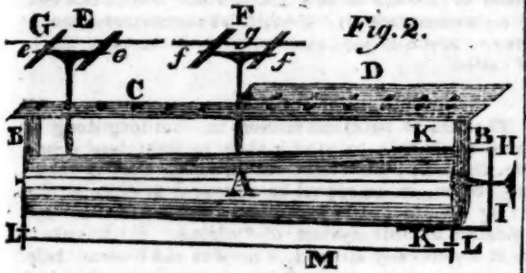

Fig 3

FIG. 1, Represents the roller complete. A is a stock 18 inches diameter at one end and 16 at the other, 9 feet in length, not hewed into an octagon as usual, but left round, in the natural shape of the tree, from which the stock was taken, after the bark was removed; in this shape the stock is not so liable to crack as if hewed. BBBB is the frame of the roller, which ought to clear the longest pins about 2 inches when turning. C is the chain by which the horses draw, it is fastened to the small iron hooks at *d d*, and has a round link in the centre to which a swingle tree may be attached—*c c* are the gudgeons, with an iron ring one inch wide in the rim and three-fourths of an inch thick fitted on each of them and placed in contact with the ends of the roller, thus limiting the friction of the frame against those ends to the surface in contact with the rings—*a a* are eight rows of large pins 9 inches apart in their respective rows, 3 inches square at the but ends—the auger holes in which the pins are driven should be 2½ inches in diameter and 5 inches in depth—*b b* are 8 rows of small pins, the holes for which are bored with an inch and a half or an inch and a quarter auger in a center line between two rows of the large pins, at ½ the distance of the holes of the large pins, so as to make in each row of small pins double the number that are in one row of large—These small pins are cut one and a half inches shorter than the large pins, so that when the roller lies upon two rows of large pins the small ones clear the ground ½ an inch, and the weight of the roller does not press upon them, which they would not bear; but on a floor of wheat I believe they get out as much grain as the large pins.

FIG. 2, Is the simple stock of the roller with the apparatus for boring the same, and lining or marking on the pins, with great exactness, where they are to be sawed off, thus securing a proper graduation. A, is the stock, which before the apparatus is fixed must be lined with a paint line from one end to the other, which is to be done as follows: find the centre at each end with a large pair of compasses or dividers, then describe circles as near the circumference of the stock as possible, fix the stock so as to keep it from rolling, take a plumb line and let it hang from the upper part of the circle at each end until it strikes the centre of the circle, then where the line touches the upper or lower part of the circle make a plain puncture with the compasses; these punctures made at each end will enable you to divide the circles into 16 equal parts, and distinct punctures should be made to shew every division; that a painted line may be drawn tight from the corresponding punctures of one end to those of the other, and struck, so as to divide the stock plainly into 16 equal parts, by 8 lines for the large pins and 8 for the small ones.

The apparatus is then fixed for boring. BB are pieces of inch plank 4 inches wide; the length must depend upon the length of the spiral part of the augers EF, so that the piece of plank C, when nailed upon the upper ends of B and B should clear that part of the augur when it is entered to bore. The pieces BB, are nailed with rivet-headed, wrought nails at the lower ends to the centre of each end of the stock, so as to turn around at pleasure; and gimblet holes are bored in them to admit a 10*d* nail about an inch from the circumference of the stock, for the purpose of tacking in nails to make them stationary when necessary. C, is an inch plank 4 inches wide and 4 inches longer than the stock; it is nailed at each end upon the upper ends of the pieces BB; and notches are to be cut in one edge of it the size of the shank of the augers with which you intend to bore the pin holes, for the purpose of keeping the augers straight and true in their place and direction, as well as to regulate the distances of the holes to be bored; but these notches must be made according to the distances that the small pins are intended to be apart, and when boring holes to receive the large pins the auger may be put in every other notch. D, is a counter piece of C, but only half the length, it is to be placed outside of the notched edge of C, and when the notches coincide or fit together, gimblet holes should be made through both pieces to receive nails that the augers may be prevented from getting out of place when you work them, with the long lever G. When using the short lever *g*, or boring with the inch and a quarter or inch and a half auger for the small pins it is unnecessary to use the counterpiece D, as these augers may be kept in the notches of the piece C by hand; but the notched piece C is necessary for the straight boring of each pin hole. How to make these notches is the next thing to be explained—strike a line on the pieces 1½ inches from the edge C, which must be perfectly straight; then make punctures according to the distance of the small pins from one end of C to the other; bore holes in all these punctures with a three quarters of an inch auger, and then saw pieces out, from the edge to the holes, of the full size of the auger holes. The notches having been made, the part C is to be nailed on the parts B B as before described, and to correspond with the paint line made for the purpose of boring the piece with the three quarters of an inch auger, there must be lines struck on the parts BB, as far as the circumference of the stock A; in order that you may more easily fix the frame BCB, at the lines on the stock A intended to be bored, and it may be thus fixed by tacking in the 10*d* nails before mentioned, when the lines on BB correspond to a line marked on the stock A. E, F represent a two and a half inch auger, fixed in different ways for boring; E, with the long lever G; and F, with the short lever *g*. This manner of fixing the auger, is an original contrivance of my own, it saves a great deal of labour in boring a roller, and requires to be particularly explained. I have used the common pin rollers for 17 or 18 years past, and when boring the large pin holes with a 2½ inch auger, have had to employ two able hands to spell each other, as one could not bore constantly. But with the long lever, as I now fix it, a boy of 6 or 7 years old can bore, making no other effort than that of walking around the stock, as a horse does at a cider mill, holding the extreme end of the lever G, in one or both hands before him; and one able hand can turn this two and an half inch auger, by the short lever *g*, as arranged at F, with as much ease as he could an inch and quarter augur, by the usual handle. The levers should be applied to the auger in the following manner: take two pieces of seasoned oak, or almost any other kind of hard timber, 6 inches long, 3 inches broad, and 2 inches thick; bore a hole about an inch from one end of each piece, with an inch and quarter or inch and half auger; and as near the other end of each piece bore a hole with the two and half inch auger. These pieces are then fastened on the ends of the handle of the auger, E F, as at *cc* or *ff*, by the small holes—and the levers G and *g* go through the large holes at the other ends; these pieces are not, however, to be fixed above the handle of the auger, as might be supposed from the figure, but they are to be placed horizontally on one side of the handle.

H is a three quarters of an inch auger fixed in a frame, for the purpose of boring the gudgeon holes *true*, which is very important, to facilitate the turning of the roller, and to prevent the end pieces of the frame B B B B, fig 1, from wearing. K I K represents the fixture; K K are two slips of inch plank, two inches wide, and four or five feet long, each slip lined upon one side in the centre. After the pin holes have been bored, the apparatus used in that operation is taken off, and these slips are tacked on two opposite boring lines of the stock, with an end of each of them projecting far enough from one end of the stock to clear the spiral part of the auger, when upon these ends the slip, I, is nailed, which is to be of the same width as the others, with a notch in the centre to suit the shank of the auger. This frame will keep this auger perfectly true in its direction until they come in contact, when the frame may be taken off, and the hole be bored as deep as necessary for the gudgeon, and the augers will not deviate from the course directed by the frame.

L, M, L is a contrivance to have the pins of the roller exact and true. After the stock is bored and the gudgeons put in, the slips of plank L L, three inches wide, and of length according to the intended diameter of the roller including the pins, are bored with an auger the size of the round end of the gudgeon near one end of each slip; these slips are put on the gudgeons, so as to turn around in contact with the ends of the stock. Half the intended diameter of the roller at each end, including the pins, is then laid off from the centre of the holes in the slips towards the other ends, for the large and small pins to be lined by after they are driven in. In laying off this half diameter, notches are cut with a saw about half an inch deep in the upper edge of each slip to suit the length of the large and small pins; and as every row of pins is driven in, the slips are turned around to the row, the paint line M is placed in the notches at each end to suit either the large or small pins, then drawn tight and struck on the pins; this line thus made on the pins shews where they are to be sawed; they ought to be sawed square, not with a bevel.

FIG. 3. Shews the manner in which a roller is to be graduated to the circle of a treading floor. My floors are 90 feet in diameter, and the fig. is made according to this size, but the principle is the same with respect to a floor of any other extent. From the point A describe a part of a circle B C, with a line or strip half the length of the diameter of the floor; measure the diameter of the roller at the large end, including the length of the pins, multiply the diameter by three, the proportion of a circle to its diameter, lay down this product, being the circumference, on part of the circle B C, as at D E, to shew the space passed over at each turn of the roller, then draw the lines from D and E to the centre A, mark the length of the roller from D to F and from E to G, then measure the distance from F to G, as it will correspond with the circumference of the small end of the roller, this divided by three will show you what should be the diameter of the roller with its pins at this end. Thus, if this fig. was laid down at 20 feet to the

inch, a roller of the dimensions in fig. 1, should have a diameter of 3 feet 6 inches at one end, and 2 feet 8 inches at the other, to work on a floor of 90 feet diameter. The circumstance of a roller being properly graduated to the size of the floor, is all important as respects the facility of its turning, and the wear and tare of it.

If I had foreseen the great length of this reply to your letter, I fear I should have been discouraged from answering it. and I still fear that your patience will be exhausted in reading this communication, and your intellects on account of my deficiency puzzled to understand some parts of it. However, as I have finished it, I shall not regret my labor, if the information now given, should prove useful to yourself or other farmers; and the only condition upon which I give it is, that if I should have any more applications for written information upon the subject of this letter, I may take the liberty to refer applicants to you.

Yours, with respect,

JAMES RINGGOLD.

P. S. I had forgot to mention the advantages of my present rollers over the common pin rollers, which I formerly used—One of them will get out as much wheat in the same time, with two horses and two hands less, as two of the old kind—One of them with two or three horses, for I sometimes use two and at other times three to a roller, will get out 70 to 80 bushels per day, in time to fan and put it in the granary. J. R.

From the Massachusetts Agricultural Repository and Journal, published by "The Trustees of the Massachusetts Society for the promotion of Agriculture."

Remarks on the most suitable season of the year for the cutting of TIMBER, with reference to its Durability.

It would seem surprizing, (say "*The Trustees*",) that a question so easily decided by a few experiments, should in this age be still a subject of dispute. Yet so it is, and although a careful collection of facts, one would suppose, would readily settle the dispute, (for upon such a subject above all others, *facts* alone must be resorted to in preference to *theory*,) yet it is true, that in this age, in which science has attained to a higher degree of certainty and perfection than in any former one, this most interesting question remains the subject of conflicting and opposite opinions both in Europe and America. The vast importance of it, connected as it is with the durability of our houses, and utensils of wood, and the still if possible more important question of the durability of our ships, one would have hoped would have led philosophers to ascertain by unquestionable experiments the true principles, and to put the question at rest.

Commodore Porter has published a very elaborate essay on this subject, and Col. Pickering has with great ingenuity and characteristic frankness, replied to the Commodore, and collected a great mass of facts on the subject, which appears to us not only to impugn the opinions advanced by Commodore Porter, but to settle the question in the minds of every man, who is acquainted with the habitual caution and exactitude of Col. Pickering in relation to questions of this sort.

It had been our intention to introduce both Commodore Porter's and Col. Pickering's views of this subject in the present number of our Journal, but the space necessarily occupied by the official accounts of the proceedings of this society, would not permit us to accomplish what we had proposed.

It may be thought by some persons, that we had better curtail our accounts of our shows and of our premiums, and give place to original communications on such interesting topics.

It should however be recollected, that, *after all*, the interests of agriculture and of our country are best promoted by diffusing through the whole mass of the people a taste and zeal for the promotion of agriculture generally, rather than to confine their attention to the speculative examination of any one point however interesting it may be. The question above referred to, though highly important seems rather to be more calculated for a philosophical or scientific journal, than for one purely agricultural. It seems to us to be of greater importance to show, that while Dr. Deane, thirty years since, spoke of 100 bushels of potatoes as the average crop, on indifferent soils and under ordinary culture and mentioned 300 and even 400 bushels on an acre with an air of surprize as the product of the best Irish culture of that plant, we are enabled to prove, that not one only, but many of our farmers are able by the recent spirit infused into the agricultural classes of society, to produce from 400 to 500 bushels of that root per acre—and that this has been done not by amateur cultivators of fortune, regardless of the cost, but that the natural and common tillers of the soil have out-stripped those who regarded not expense in the attainment of their ends. The same remarks apply with still greater force to the other articles of root culture, and it is now seen that the Essex and Worcester farmers take the lead in the culture of the carrot, the Mangel Wurtzel and the Ruta Baga.

No man can doubt that considered in relation to *Agriculture only*, these proofs of success in that art should have the preference, to the disputed, though highly important question as to the best time of cutting timber. But though we contend for this opinion, we are by no means of the sentiment that the other should be neglected, and therefore while we regret that the limits of this number will not permit us to give at large as we intend to do, the arguments of Commodore Porter and Col. Pickering on the best time of cutting timber with reference to its durability, yet we with pleasure devote the small space left to us to the following interesting letter from Mr. Poor, on the same subject, and fully supporting the hypothesis, and corresponding with the facts advanced by Col. Pickering.

Newburyport, July 31, 1821.

GORHAM PARSONS, ESQ.

DEAR SIR,

I heard you observe the other day, that every kind of information which would in any measure serve to advance the agricultural interest of the country, should be made public, and every friend to agriculture, should do all in his power to have it generally diffused. It has since occurred to me, that the following facts may be of some service. If you are of that opinion, you are at liberty to communicate them in any manner that you may think proper.

The following are the facts alluded to, and are within my own knowledge and observation, viz. :—In all the fall of 1812, my grandfather (then ninety one years old) in conversation with a respectable mechanic on the subject of the durability of timber, urged with much earnestness, the great importance of cutting or felling the trees in the old of the moon in the month of March, the mechanic with as much earnestness, but with great respect for the old gentleman, insisted "that the month of June was the best month, that timber cut at that time and well seasoned, was worth double that cut in March, it was to be sure much harder to work, but would endure longer, and for any use on a farm, particularly ploughs, carts, harrows, drags, &c. it was incomparably better; and he further observed "that he was once of grandfather's opinion, not from his having made any actual experiment, but from having been told from his youth, that March was the proper month for felling timber trees, that from accident he at first had an opportunity of testing the difference, and on further attention to the subject, he was fully confirmed in his present opinion." My grandfather still adhered to his opinion, but was desirous of making an experiment by selecting two white oak trees, size, situation, general appearance as to age and health, and the soil, as near alike as possible, that was done at the time, the fall of 1812. In the month of March following, in the old of the moon one tree was cut, the timber carried to the mill and sawed into suitable timber and scantling for an ox cart, and put up to season in the open air, the middle of June the other tree was cut, carried to mill, and sawed into timber, &c suitable for an ox wagon, and put up in the open air to season, and treated in every respect as that cut in March. In the fall of the year, both parcels of timber were housed, and in the spring following, an ox cart was made from one, and an ox wagon from the other parcel, both painted and the work alike in all respects They were used principally for hauling stone, and if there was any difference in the service to which they were put, it was that the June timber had the hardest use, they were both housed in winter, and commonly remained out in summer. At this time the one made of timber cut in March, is very much decayed, the raves defective, much bruised, and a general appearance of decay and of being much the worse for wear, while that made of timber cut in June, is perfectly sound, and has not given way or started in the joints, or in any respect appears half as much worn as the other, although as before observed it has been put to harder service, and it is a fact that in this instance the June timber is very much harder, and is not so much bruised as that cut in March. I send you a piece of plank from each parcel, and you will at once perceive that a striking difference is in favour of that cut in June, the mechanic who induced this experiment, says timber cut in June, must be sawed soon after 'tis cut, and near the size in which it is to be used, for it is much more difficult to work than timber cut in March, but it will not powder-post or crack in the sun; he is also of opinion that it would be far more durable as ship timber, but this experiment goes only to prove its superiority for farm use, and I am fully satisfied that it will be for the interest of farmers to use for their carts, wagons &c

timber cut in June, in preference to that cut at an earlier period. I should like to know, why June is the best time, and how it happens, that even accident should not have done away the long established opinion, that timber to endure and be serviceable, must be cut in March. Should the preceding facts be acceptable my object is obtained.

And I remain your obedient servant,

BENJAMIN POOR.

From the same Journal.

Importance of a common Language in Agriculture, remarks on the present confusion in the names of Grasses.

The following letter from a very intelligent and highly respectable cultivator of Maryland, expresses a sentiment, which we, "The Trustees of the Massachusetts Society for the Promotion of Agriculture," have often endeavoured to impress in our Journal; to wit, the great importance of having a common language in agriculture as well as in every thing else. There is nothing so unsettled as the familiar names of grasses and fruit trees, and indeed of the varieties of the potato, and many other cultivated articles.

We do not agree with Mr. Forman, that in Europe there is more of this confusion of names. So far from it, the men of education all understand each other when speaking of grasses or fruit trees. The only perfect mode of ascertaining precisely, whether we do agree in our application of names, is the one which Mr Forman has wisely adopted, that of sending reciprocally, specimens of the plants, together with the name, or names, if more than one, by which they are known in our vicinity. We have no hesitation in saying that one of the plants sent on by Mr. Forman was the Phleum pratense of botanists, known also by the names of meadow catstail, according to Nicholson's Farmer's Assistant Timothy Grass, Herds Grass, Foxtail. With us it is called Herds Grass, in England Timothy, in the middle states Timothy. Col. Pickering was perfectly correct therefore in giving the synonyme of Timothy to the Phleum pratense.

The other specimen which we saw was the Poa Pratensis of botanists, so known from Sweden to Spain, and from Maine to Carolina. Its most usual vulgar name *here* is 'Red top,' a natural allusion to the colour of its heads before flowering. We have heard it called also Rhode Island grass. Mr. Forman's communication first informed us, that it ever had obtained the name of *Herds Grass*, to which it has not the most distant resemblance. We would observe, that the application of these names in New-England, to those two grasses, is of very ancient date, having been published with us more than half a century ago, and so far as we know they have been uniformily so applied ever since.

Another of the grasses sent by Mr. Forman was the Avena Elatior, 'tall meadow oat grass,' 'tall oat grass,' in Farmer's Assistant, 'oat grass,' wild oat, and Nicholson says sometimes called 'orchard grass,' which it very little resembles, and which is as well known in both Great Britain and America, (though not much cultivated in either,) as any grass whatever.

The fourth gaass sent by M. Forman is the Dactylis Glomerata of botanists, properly 'orchard grass' of England and America, or 'Cock's foot,' as some have it. We think it would be more convenient to unite in calling it 'orchard grass,' as its English title. Sir Humphrey Davy's Agricultural Chemistry, and Mr. Muhlenberg, will enable us to understand one another when we speak of Dactylis Glomerata; but 'orchard grass,' would be more convenient as a common name It probably derived this familiar name from its being fond of the shade of trees, often found in orchards and thriving better in such situations, *not than it does elsewhere*, but better than almost any other grass would. We have ourselves, some hundred tufts of this grass which thrive and flower annually under the Tilia Europæ,a European lime tree, which has the densest foliage of any tree we have, and which have flourished there for thirty years past, while no other plant except the mosses have been able to sustain itself under such disadvantages.

Rose Hill, August 3, 1821.

[To John Prince, Esq. one of the Trustees of the Massachussetts Agricultural Society.]

SIR,

In this package you will find some varieties of our cultivated meadow grass. I am influenced by the strange confusion respecting their names, and my attention has been more closely drawn to the subject by the remarks of Mr. Pickering, who confounds the herds and timothy.

In Europe, the boasting Europe, we are not surprised to learn that in adjoining towns and counties, the most common vegetables are recognised by different names, but in this country, we have not, and I devoutly pray we never may have any thing like provincialism, in language or habits.

The seeds and specimens are perfect, being all gathered by myself, and I beg of you that you will exercise your industry to give to the public through the medium of your valuable repository, not only a botanical description, but the true *vulgar* names of these grasses.

I am,

Your obedient servant,

T. M. FORMAN.

FOR THE AMERICAN FARMER.

On the best Rotation of Crops.

Garlick banished by the Oat Crop.

"We may count upon all the arable land of farms, yielding a yearly income, *without any part lying idle* in rubbish old field; not as which is the case at present, but as believing that perpetual alternate crops from the whole ploughable land, will insensibly become very general, as the spirit of improvement shall though slowly, advance on the grounds of reason and experiment."—BOUNTRY.

Sir, February 18th, 1822.

Although I have attempted to prove that a six, is inferior to a four field tillage, it is not because I prefer the latter as the best rotation. If you will pardon my egotism, you will perhaps better understand my theory, if I relate my various experiments.

When in the year 1789, I commenced farming upon my present residence, I found my land which was originally of first quality greatly impoverished, gullied, and without an acre of grass to assist me; and to complete my difficulties, what little wheat did grow, was of the lowest quality, being one tenth garlick. Much good advice was given to me how to eradicate this nuisance. And it seemed to be a general opinion among *learned* and *wise* farmers, that if I would give my lands a full ploughing, just deep enough to expose the bulbs to the action of the frost, I might rely upon getting rid of the enemy. The experiment was fully and repeatedly made, but without any perceptible success. I had yet another difficulty, my land was in three fields which does not allow time for the growth of artificial grasses. Oats is known to be the most inveterate enemy to garlick, why or how, I do not pretend to say, nor can I say why our common Red Cedar is an enemy to all our thorn hedges, to our Wild Crab; to our soil a service, and to our Quince trees, the fact however is so: Yet I do know from a variety of experiments that neither spring Barley, spring Wheat, or spring Rye, have equal, or indeed any perceptible influence upon Garlick. When therefore I commenced a four field rotation of corn followed by Oats, Wheat and Clover, I imagined my plan perfect. A few years however convinced me that I had yet much to learn. The Garlick indeed disappeared, but so did the white Clover; and one field in Corn, another in Oats, a third in Wheat, the fourth field in Clover could not be both mowed, and pastured, and this rotation after a full round, was given up as unproductive and impoverishing. But by the experiment I was fully convinced, that when Clover was sown upon the wheat, my land was not injured *by the Oat Crop*, and to ascertain which, it was my invariable rule to omit seeding Oats upon strips throughout the field, and ten days after, or a week before harvest, invite men of judgment and observation, to ride over and examine the ground, to point out if they could, the strips which had not grown Oats—No difference in the wheat was ever seen, nor could the strips be discovered, except that in those missing places there was more garlick. From frequent observance of this fact, I formed the opinion that the ground cleansed from garlick and grass, and the Oat Stubble ploughed under, made ample amends for any injury done by this reputed exhausting crop.—With this impression, and determined to have grass and hay, to give food for my stock, shelter to the land, and manure to improve it, I divided a moiety of my farm into five fields, leaving the other half to be cultivated in three fields. It is singular that Mr. Bordley, than whom no man in the United States had read more upon the subject of Agriculture, or who was more sincerely desirous to improve our husbandry should not in the many rotations recommended by him, have even suggested a five field course: but he wrote more for the neighbourhood of a city than for persons distant from a market, more to improve a small farm, than to make money from a large one: he had only foreign writers to consult, and without paying the necessary attention to our climate and population, you find him discouraging the culture of Corn, and substituting the inferior crops of England.—My five field tillage commenced with

Wheat upon a clover sod, Corn upon the Wheat stubble, Oats and clover upon the stalkfield.—Upon the first round, never was a man better pleased with an experiment, which appeared to be the *ne plus ultra* of rotation. From 18 to 22½ bushels per acre was the produce of my wheat-fields—corn excellent, oats and clover good as I could ask, but the second course completely changed the scene. Blue grass obtained such an ascendency that my wheat was inferior to my three-field tillage; yet unwilling to relinquish my hobby, I procured the most perfect ploughs, and with excellent ploughmen, turned my land in a style which obtained general admiration. With a four feet, six inches diameter framed roller (the hint for which borrowed from the Honorable R. Goldsborough, of Talbot.) drawn by four quick and stout oxen, this field was neatly levelled, and at a proper time, the harrows performed their duty upon it. With small, light ploughs my wheat was covered about one inch deep, and the whole levelled with light harrows, fearful to disturb the sods; upon observing some symptoms of blue grass, careful hands with garden rakes and each a wheel-barrow, collected every stone, weed, and sprig of grass. With this field my neighbors found but one fault, it was too smooth. Five years before, it had grown twenty two and a half bushels to the acre, without any uncommon care, since which crop the land had been greatly enriched by the application of home-made manure, in various forms, and yet after all my care and trouble, I did not cut six bushels to the acre—in the season there was not any thing remarkable, and the falling off could only be accounted for by an overwhelming crop of blue grass. The loss of a crop was not my greatest misfortune, I lost character, and every steady two and three-field farmer, cracked his joke upon "the failure of F——'s five-field *rotion* and *oat seeding* plan, which they *always knew was the destruction of land.*" You may call it perseverance, obstinacy, or vanity, but I determined to improve upon the sentiment which applauds the man who grows two heads of wheat where only one grew before. My motto is to double my quantity of grain, without increasing labor or expense. The farmer who doubles his crops, although at a double expense, is no doubt entitled to great applause as a publick benefactor, because any district so improved, can support a more dense population, but it is not with this view, my remarks are made.

I aim at a rotation simple in its execution, productive in its results, and requiring the least labor. Whether I have in any degree succeeded, you will have an opportunity of judging from my next communication, in which I shall endeavor to redeem the pledge claimed in your No. 39. I am your obedient servant.

F.

JOHN S. SKINNER, ESQ.

FROM THE ALBANY REGISTER.

A Machine for cleaning Clover Seed.—We have been called upon to view a machine or mill for hulling and cleaning clover seed, invented by Mr. John Bolton, of Warren, in Herkimer county; and for which he has obtained a patent. It is of simple and cheap construction, and in operation will require a water power equal to that which is required for a run of stone. It may be erected by itself, or applied to the spindle of another mill, in which case it will not cost more than 30 or 40 dollars. With an application of the power above mentioned, it will clean one bushel of seed in an hour. This machine has been tried, during the last year, and found to answer the purpose contemplated by the inventor, whose ingenuity and enterprise deserve the patronage of the Agricultural Interest.

From the Plough Boy.

Concerning Fruit Trees.

Several communications have appeared in the Plough Boy, as well as publications at Baltimore, recommending the use of Tanner's Bark round the trunk and roots of trees as a preservative against insects. In 1810, I placed round the trunks and roots of about 1000 trees of different kinds about two bushels tan to each tree, as an experiment. I found the trees to thrive in a very luxuriant manner for some time, but when the tan began to decay, I found several of my trees destroyed; which was caused by a white grub with a red head, (known by the name of wood-worm.) I then examined an apple orchard of about 200 trees, where no tan had been used, and found the trees in a much better state; very few of which were infected with the grub above mentioned.

I have made trial of about twenty different kinds of experiments, generally recommended to save my fruit from destruction, but have found all of them to give only temporary relief from infection. I discovered that to take about two bushels of earth six inches below the surface, and throw it round the trunk and root of each tree, after cleaning the old soil from the trunk down to the root, to answer as good a purpose as tan; which earth should be removed once every two years, and new earth applied as before mentioned.

I have also found, that to have a heap of stones placed on the south side of every peach tree, proved as beneficial as either earth or tan.

The only benefit derived from tan is, that the frost will remain longer next to the trees in the spring, than about those which were not tanned, and until the weather becomes more settled so that you are more sure of a crop, and the buds are not injured by frost and thaw.

I have found that the chief destruction among the peach trees is as often done in the latter part of August as in any part of the season; upon examination, I have perceived the end of the peach twigs to have been stung by some insect, then to turn brown and spindle; the year following the leaves become curled and sickly; by watching peach trees at that time of the year, it may be seen that a number of black ants are to be found at the end of the twigs—this I suppose is the principal evil to which peach trees are subject.

In the spring about three or four days after the frost is out of the ground, you may find some of the white grub at the root of peach trees commonly secreted under the gum; which may be remedied in the following manner; by clearing the earth about five or six inches below the surface, scrape the gum off, and apply dry ashes to the wound.

The best remedy that I have been able to discover for plum trees, is to place a quantity of oyster or clam shells round the roots, and every spring as soon as the frost is out of the ground, to pour nearly two quarts of water about the root, which water is taken from ten gallons in which one ounce of corosive sublimate of mercury had been dissolved; this water is also good for peach trees if applied at the roots during the summer.

I think it necessary to caution those who may feel disposed to make use of this water, that it is possessed of poisonous qualities, and therefore should not be put in any wooden vessel, except it is kept expressly for that purpose. P. L.

FEBRUARY, 17th, 1822.

Friend Skinner,

As thou hast lately been publishing many rare and valuable receipts for the preparation and preservation of various things conducive to the comfortable subsistence of man, it has occurred to me that it might not be irrelevant to thy views to offer thee something which may be called beginning at the fountain head; as the purpose is, to prepare and preserve man himself, both in his mortal, and immortal parts, I send thee therefore, the following prescriptions, which if they appear worthy of a place in "The American Farmer," thou art welcome to insert them, as the recommendation of

Thy Friend and Constant Reader.

RECIPE.

To Cure and Preserve the Body.

Wouldst thou be healthy, wealthy, free,
Plough well the SOIL, and well the sea.

To Cure and Preserve the Soul.

Wouldst thou be happy, honour'd, wise:
Then, Virtue more than all things prize.

RECIPE.

The Pneumatic Influenza.

An *Indian Sweat* by means of *steam*, has been found to effect a cure with the greatest certainty.

1. Take alum and brimstone equal quantities, say the size of a thimble, and as much gun-powder or nitre as will balance both, pulverize and mix them together. Then take as much of this mixture as will lie on a quarter of a dollar, make it into a potion with vinegar and water, say half a gill for a grown person, let him drink it, and cover him warm in bed.

2. Then have ready a pot of ears of corn boiled, take the corn hot, wrap 5 or 7 ears together in a bunch, put one bunch on the feet, another between the knees, and a third to the hips, &c. as hot as can well be borne, but be sparing in putting it about the breast. If the first boiling of corn fails to bring a tolerable sweat in an hour, try the second. When the sweat has been once attained, the corn may be removed but the sweat should be kept up moderately by drinking weak sage tea, reasonably warm for four hours. Then cool carefully, and the cure will frequently at once be effected. But if an oppression of the breast remains, take the like portion of the mixture and vinegar the two following days, but don't force the sweat, for an excess of sweat may do harm.

If the body is costive, it should be relieved, either by injection or by some moderate purge, such as scurvy grass, butternut pills or salts.

This disease in common, is not a bilious complaint, and may often be cured.